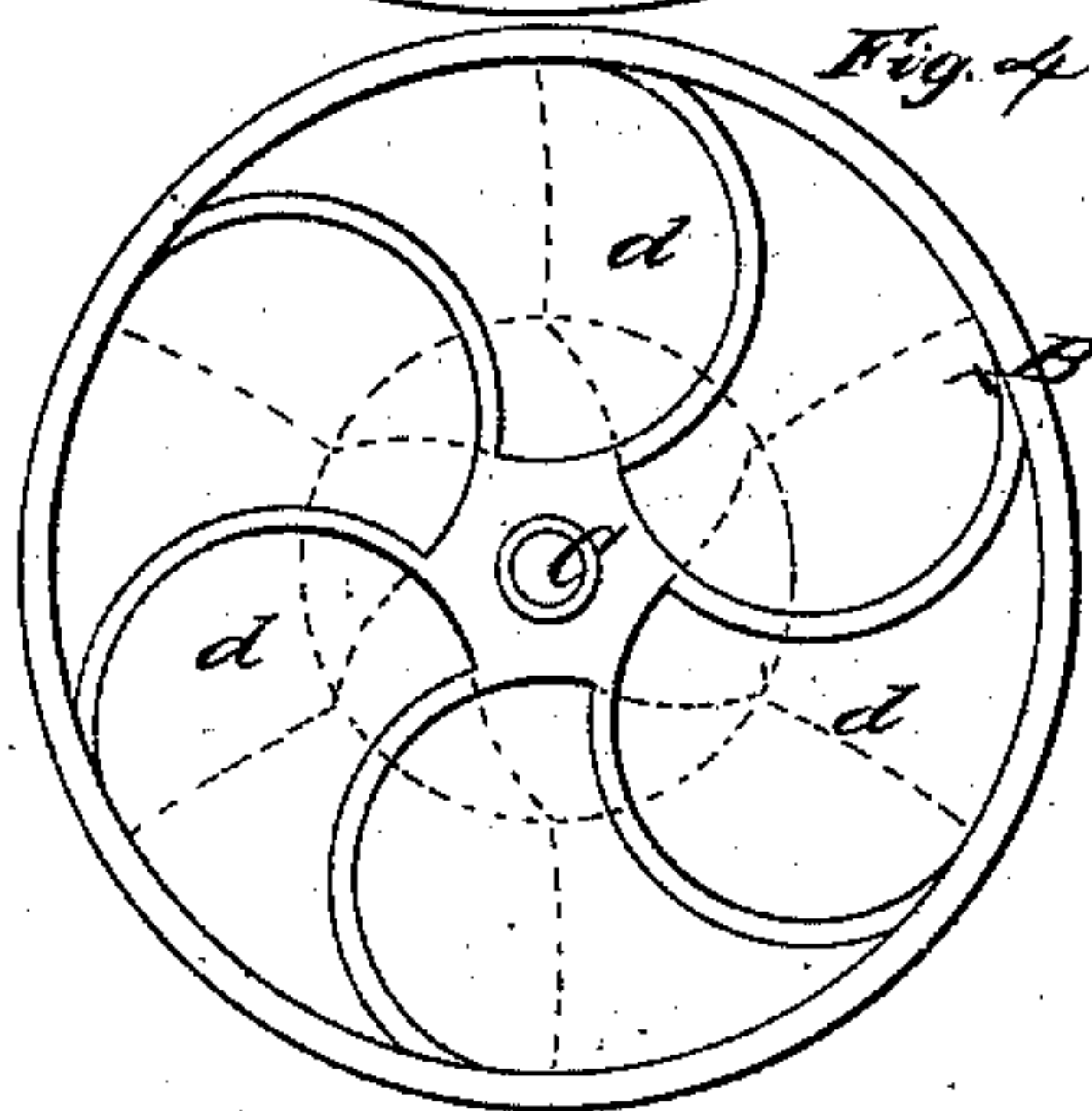
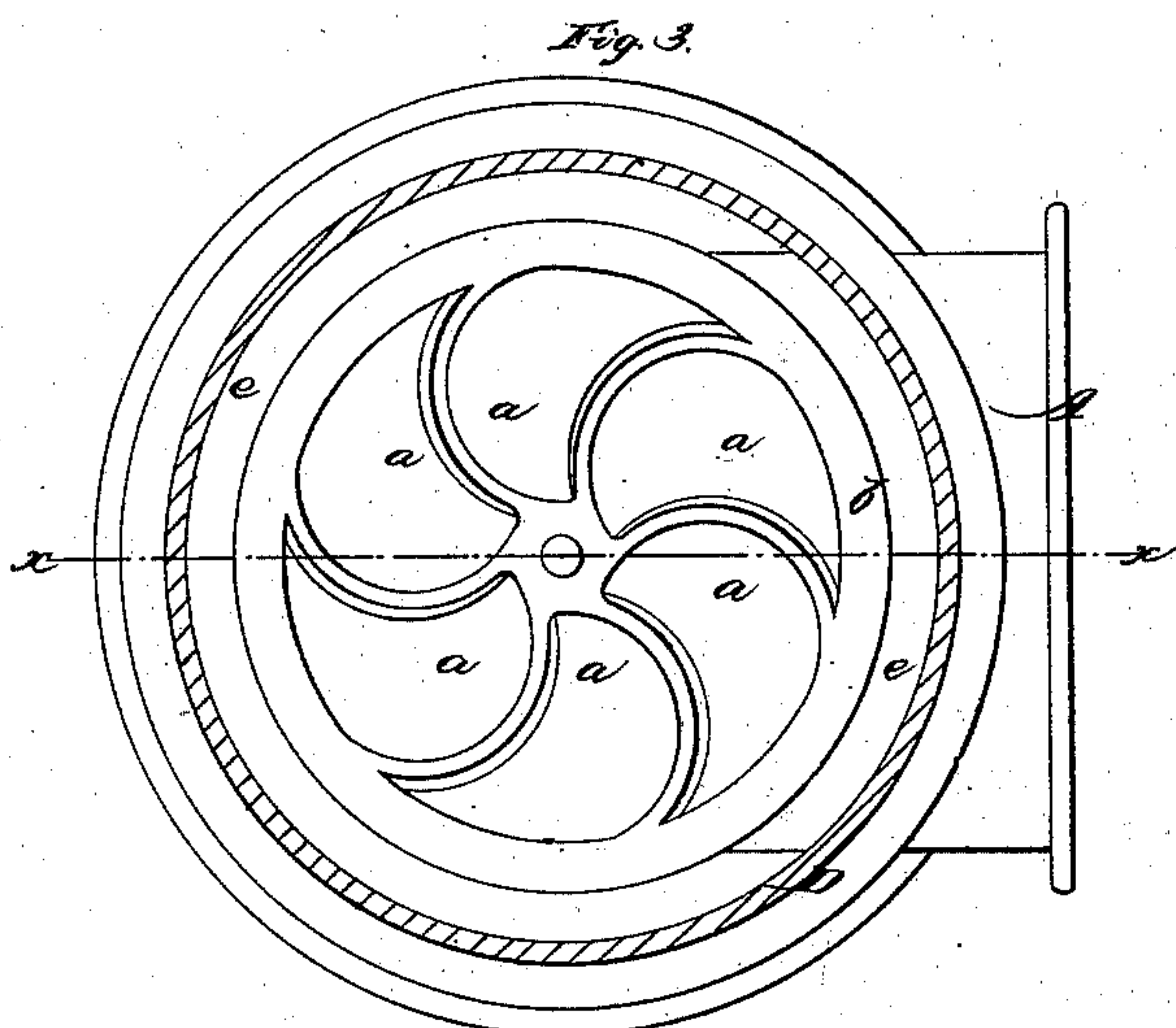
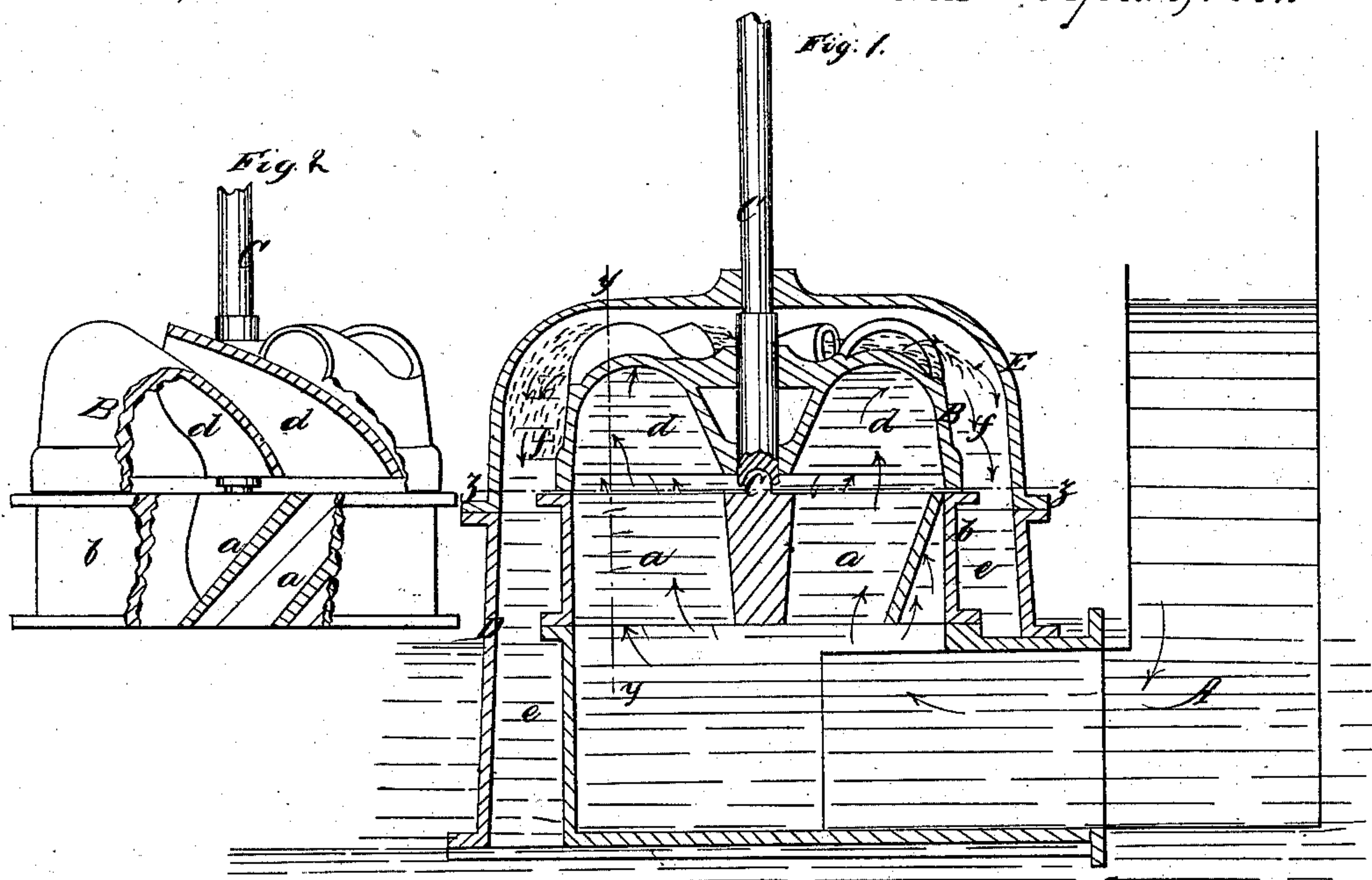


Haag & Smith, Water Wheel.

N^o 32,063.

Patented Apr. 16, 1861.



Witnesses
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UNITED STATES PATENT OFFICE.

JOEL HAAG AND J. C. SMITH, OF BERNVILLE, PENNSYLVANIA.

WATER-WHEEL.

Specification of Letters Patent No. 32,063, dated April 16, 1861.

To all whom it may concern:

Be it known that we, JOEL HAAG and J. C. SMITH, of Bernville, in the county of Berks and State of Pennsylvania, have invented a new and Improved Water-Wheel; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1, is a vertical section of our invention taken in the line x, x , Fig. 3; Fig. 2, a detached sectional view of the wheel with its chutes or water guides, taken in the line y, y , Fig. 1; Fig. 3, a horizontal section of the invention, taken in the line x, x , Fig. 1; Fig. 4, a detached inverted plan of the wheel.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to an improvement in horizontal water wheels and consists in the employment or use of stationary chutes or water guides arranged relatively with a discharge or draft tube and a flume, substantially as hereinafter described, whereby it is believed several advantages are obtained over other wheels of a similar kind hitherto devised, to wit: the easy and uninterrupted flow of the water through the wheel, the preventing of the wheel being retarded by back water and the general adaptability of the wheel in all cases where a horizontal wheel is desirable.

To enable those skilled in the art to fully understand and construct our invention we will proceed to describe it.

A, represents a flume which may be of rectangular or other suitable form and which leads from the reservoir to a series of chutes or water guides a , the latter being arranged in annular form within a rim or cylinder b , directly over the end of the flume so that the water will pass upward through the chutes as indicated by the arrows in Fig. 1.

B, represents the wheel the shaft C, of which is stepped at c , and concentrically with the rim b , of the chutes or guides a . The buckets d , of the wheel are of concave spiral form gradually diminishing in width from their lower to their upper ends. The chutes or water guides a , are of the same form but are placed in a reverse position so

that the water may strike the buckets at right angles.

D, represents a cylinder which encompasses the rim or cylinder b , of the chutes a , and extends down as low as the bottom of the flume A. The cylinder D, is larger in diameter than the rim or cylinder b , of the chutes a , so that a space e , is allowed between them.

E, is a dome-shaped cap or top which is placed on the cylinder D, and covers the wheel B, a space f , however is allowed between the wheel and cap which coincides with the space e , between the cylinders b , and D, as shown in Fig. 1. The shaft C, passes up through the center of the cap or top E, the power being taken from the upper part of the shaft.

From the above description it will be seen that the water issues from the top of the wheel B, and escapes down the spaces f , e , the latter forming a draft tube and admitting of a free escape of the water, and in case of a fluctuation in height of the "tail race" in which the lower end of cylinder D, is immersed, the wheel will not be retarded or affected in consequence, as the wheel is elevated considerably above the "tail race." The dome-shaped cap admits of the water passing easily from the wheel and down the space f , there being no abrupt angles presented to obstruct its discharge.

All of the parts may be constructed of metal, cast iron, and the device therefore afforded at a reasonable cost, equally so, as the generality of wheels of a similar kind.

We are aware that water wheels have previously been constructed with concave spiral buckets and that chutes or water guides have been adapted to direct the water against the buckets at right angles. We are also aware that wheels have previously been adapted to receive water at bottom and discharge it at top, and likewise that wheels thus receiving and discharging the water have been covered with a cap or casing. We therefore lay no claim to the parts of our wheel separately considered but (having practically and thoroughly tested the invention) we believe that by constructing, combining and arranging the parts in the manner shown and described valuable results are attained in the economy

of construction, ease of motion and effective power of the wheel.

What we claim as new and of our invention, and desire to secure by Letters Patent, is:—

The combination of the inclined chutes or water guides *a*, cylinder or rim *b*, concave spiral buckets *d*, dome shaped cap *E*, flume *A*, and annular draft way *f*, *e*, the whole

being constructed and arranged, in the manner and for the purposes hereinbefore set forth.

JOEL HAAG.
J. C. SMITH.

Witnesses:

JOHN KLINE,
WILLIAM TILL.